

**MULTI-MODAL FORCED VORTEX DEVICE**Abstract

A multi-modal forced vortex device is described having a top plate and a side wall creating a partially enclosed volume. The top plate includes one or more adjustable fluid openings to permit, or restrict, fluid flow into and out of the partially enclosed volume. Rotating blades housed within the partially enclosed volume are manipulated (through control of their pitch and, possibly, their speed) in conjunction with the adjustable fluid openings to generate a variable magnitude attractive force in a first mode, a variable magnitude down or pushing force in a second mode, a variable magnitude up or lifting force in a third mode or variable magnitude yaw, pitch and roll forces in a fourth mode.